

We claim:

1. An apparatus for regulating the concentration of insulin within the blood of a living organism, wherein said apparatus is comprised of an in vitro cell culture for producing insulin, an in vitro cell culture for producing glucagon, an in vitro cell culture for producing somatostatin, means for measuring the concentration of glucose within the blood of such living organism, means for measuring the concentration of insulin within the blood of such living organism, means for delivering a specified amount of insulin to the blood of such living organism, means for delivering a specified amount of glucagon to the blood of such living organism, means for delivering a specified amount of somatostatin to the blood of such living organism, and means for reducing the amount of insulin within such blood of such living organism.
2. The apparatus as recited in claim 1, wherein said apparatus further comprises means for withdrawing blood from a venous blood supply.
3. The apparatus as recited in claim 1, wherein said apparatus comprises means for detecting the presence of analytes in said venous blood supply.
4. The apparatus as recited in claim 3, wherein said apparatus is comprised of a controller comprised of means for determining the concentration of said analytes in said venous blood supply.
5. The apparatus as recited in claim 2, wherein said apparatus is comprised of means for reducing the amount of glucagon in the said venous blood supply.
6. The apparatus as recited in claim 1, wherein said apparatus is comprised of means for reducing the pH of said blood.



19. The apparatus as recited in claim 18, wherein said apparatus is comprised of a third pump for extracting said analyte from said culture media reservoir and conveying said analyte to said isolator.

20. The apparatus as recited in claim 1, wherein said apparatus comprises a filter for purifying and isolating analytes.

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